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Composition of oils of carbonate reservoirs in current and ancient water-oil contact zones

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Abstract

© 2015 Springer Science+Business Media New York. Differences in the composition of heavy oils from ancient and current water-oil contact (WOC) zones of productive strata of carbonate reservoirs of deposits of Bashkir and Turnei (Tatarstan) stages are discerned by applying a host of physicochemical methods, namely, elemental analysis, liquid-adsorption chromatography, gas chromatography, IR spectroscopy, and EPR spectroscopy. There is no direct connection of the composition of the hydrocarbons with the secondary changes of the reservoirs and their filtration-capacity parameters. Signs of seepage of light hydrocarbons are detected in the ancient WOC zones characterized by the presence of products of biochemical degradation of high-molecular-weight components of residual oil. This provides a basis for suggesting that these zones are not only fluid-supports but also migration channels for interstratal seepages of hydrocarbons during formation and development of oil reservoirs.

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Keywords

Carbonate reservoirs, Filtration-capacity parameters, Geological-lithological properties, Heavy oil, Water-oil contact zones